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Can an L2 Speaker's Patterns of Thinking for Speaking Change?

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Thinking for Speaking

Edited by
ZhaoHong Han and Teresa Cadierno

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Contents

L1 and the L2 visible to the learners and would allow them to experiment with tailoring existing meaning-making processes to L2 TFS patterns through contextualized discourse-level production tasks.

With regard to the field of motion talk research, this study, with its focus on (non)unidirectionality as an important conceptual component of encoding motion path, shows that the broad categories of manner and path and their instantiations in individual languages need to be refined, empirically studied, and described in greater depth if we are to make conclusions about L2 acquisition of these categories with any degree of precision. Future in-depth analyses and contrasts of crosslinguistic conceptual schemas would not only enrich the wealth of evidence for crosslinguistic variation in the domain of motion talk, but also allow us to operate with validated and more precise analytical contrasts in SLA research, including the investigations of L2 TFS effects in the domain of motion meanings and associated pedagogical implications.

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Notes

1. Talmy's typology has been extensively described in the literature and, therefore, will not be summarized again here. A recent chapter (Talmy, 2006) provides a brief overview of the conceptual categories and the dichotomy he described in his earlier work.
2. The dichotomy has been recently revised to include equipollently framed languages in which manner and path receive equal weight (e.g. see Slobin, 2006).
3. Chinese is considered to be an E-framed language in a revised motion talk typology; both groups utilize manner verbs. In reference to Chinese, some still argue that Chinese is in fact an S-famed language (see, e.g. Peyraube, 2006).

Chapter 3

Can an L2 Speaker's Patterns of Thinking for Speaking Change?

GALE A. STAM

Introduction

Language and culture are intricately related. Language is both a by-product of and a transmitter of culture. It is the means by which concepts of space and time are mastered and has a direct influence on the cognitive development of individuals (Klein, 1986). What is the relationship between language, culture and thought? The answer to this question is fundamental to an understanding of not only human culture and mind, but also second language acquisition. In this chapter, I will explore this question from the perspective of thinking for speaking; Slobin's (1987, 1991, 1996a) hypothesis that languages not only provide speakers with a framework for the expression of experiences, events and thoughts but also guide how experiences, events and thoughts are expressed at the time of speaking, and my extension of the hypothesis to second language acquisition – second language learners must learn a different pattern of thinking for speaking when their native language's pattern differs from the second language's pattern (Stam, 1998). I will use spontaneous gestures, the gestures speakers make when they speak, as a means to investigate whether a second language learner's thinking for speaking changed as her proficiency in her second language, English, increased.

First, I will discuss what spontaneous gestures are. Then, I will discuss the linguistic relativity hypothesis and thinking for speaking. Next, I will discuss thinking for speaking as it applies to motion events in first language (L1) and second language (L2). Afterwards, I will discuss the study I conducted to investigate whether a second language learner's patterns of thinking for speaking changed in both her first language (L1) and second language (L2) with increased L2 proficiency.

Gestures

The gestures discussed in this chapter are movements of the arms and hands that people make to accompany their speech. These spontaneous gestures are phonologically, semantically and pragmatically synchronic with speech (McNeill, 1992). They are not culturally specific (emblems) or lexicalized gestures, such as the thumbs-up sign whose meaning is well known to all members of a cultural group or gestures that complete an utterance by filling a grammatical slot. Rather, they are external manifestations of a speaker's online thinking for speaking (McNeill & Duncan, 2000). Sometimes speech and gesture represent the same entities, and sometimes they complement each other, where the gestures indicate an aspect of the speaker's thought that is present but not expressed through speech.

Speech and gesture express two aspects of thought – the verbal and the imagistic (McNeill, 1992). They arise from the same underlying mental process and form a single-integrated system in which thought, language and gesture develop over time and influence each other (McNeill, 2005).

Empirical research (Goldin-Meadow, 2000, 2003; Marcos, 1979; McNeill, 1992, 2000; McNeill & Duncan, 2000; Stam, 1998, 2006a, 2006b, 2008) has shown that gestures provide researchers with an enhanced window onto the mind through which mental representations can be observed, and they provide information about speakers' thinking that speech alone does not.

Since the 1970s, the use of gestures in second language acquisition has been explored by a growing number of gesture and second language researchers (for reviews, see Gullberg, 2006, 2008; Gullberg & McCafferty, 2008; Stam, 2006a; Stam & McCafferty, 2008). One area where the concept that gestures offer an enhanced window onto the mind has been applied is in the investigation of the thinking-for-speaking hypothesis and second language acquisition (Stam, 2007).

Linguistic relativity hypothesis and thinking for speaking

Although the linguistic relativity hypothesis is most closely associated with Whorf, the idea that language influences thought can be traced back to von Humboldt (see Gumperz & Levinson, 1996; Lucy, 1992a, 1996; Stam, 2006a, for reviews), who viewed language and thought as an inseparable unit with each language giving its speakers a particular 'worldview' (von Humboldt, 1836/1999: 60).

Whorf (1956) proposed that language not only influenced thought, but also that the language people spoke and the habitual linguistic patterns that they used caused the speakers of different languages to think differently about the world around them. By habitual linguistic patterns, Whorf meant more than merely grammatical patterns of a language. These were general patterns of language use and included the analogies and metaphors

that are shaped by the language that is spoken and by the culture of the speakers.

Since the mid-1970s, there has been a renewed interest in the linguistic relativity hypothesis (see Lucy, 1992a, 1996, for a review of studies and Gentner & Goldin-Meadow, 2003, for representative studies), and research has focused on two versions – a strong version advocated by Lucy (1992a, 1996) and a weak version proposed by Slobin (1991) called the thinking-for-speaking hypothesis.

Thinking for speaking represents the type of thinking that occurs online in the process of speaking (McNeill & Duncan, 2000; Slobin, 1991; Stam, 1998). Languages differ typologically in how semantic domains such as motion, space and temporality are indicated lexically and syntactically. Building on Talmy's (1985) work in cognitive linguistics, Slobin (1991) proposed that 'in acquiring a native language, a child learns a particular way of thinking for speaking' (Slobin, 1991: 12). Children learn grammatical constructions and lexicon that not only provide them with a framework for the expression of thoughts, events and feelings but also guide their expression as they engage in the online thinking process related to speaking.

Slobin (1991) has claimed that one of the ways that the thinking-for-speaking hypothesis can be investigated is by looking at second language learners and the difficulties they have in mastering aspects of second languages (Stam, 2006a, 2006b; see also Han, 2004, this volume). He has hypothesized that many language patterns acquired in childhood are 'resistant to restructuring in adult second language acquisition' (Slobin, 1996a: 89). Here, the typological differences between languages are important. If different patterns of thinking for speaking exist in the L1 and the L2, then learners must learn another pattern of thinking for speaking in order to be proficient speakers in their L2 (Stam, 1998). This involves 'learning which particular details of a motion event must be attended to in the input and expressed in the L2' (Cadierno & Lund, 2004: 145; see also Cadierno, this volume; Hasko, 2009). At issue is how to ascertain when learners are speaking their second language whether they are thinking for speaking in their L1, the L2, or somewhere in between.

Motion events

To test the thinking-for-speaking hypothesis, crosslinguistic research has been conducted in the domain of motion events – movements of entities through space – in a number of different languages (Danish, Dutch, English, German, Hebrew, Icelandic, Korean, Japanese, Mandarin, Russian, Spanish and Turkish). Motion events include the following components (Aske, 1989; Talmy, 1985, 1991, 2000b): *motion* – the movement, *figure* – the moving object(s), *ground* – the reference object(s) in relation to which the

figure moves, *path* – the direction or trajectory of the motion and *manner* – the way in which the motion is performed (cf. Stam, 2006a, 2006b, 2008).

On the basis of where a language encodes path, Talmy (1985, 1991, 2000b) has classified languages into two types: verb-framed and satellite-framed (for discussions, see also Cadierno, this volume, and Victoria Hasko, 2009). In verb-framed languages (Romance, Semitic and Japanese), path or directionality is encoded on the verb, whereas in satellite-framed languages (Indo-European except Romance, Finno-Ugric and Chinese) it is encoded on a satellite, a particle.

Spanish and English exemplify these two typologically different languages (Talmy, 1991). Spanish is a verb-framed language, while English is a satellite-framed language. In Spanish, motion and path are indicated by the verb, and manner if present in speech is indicated outside the verb by an adjunct, an adverbial such as a gerund or a phrase. For example, in *él entra corriendo* 'he enters running', the verb *entra* 'enters' indicates path, while the gerund *corriendo* 'running' indicates manner. In English, motion and manner are indicated by the verb, and path is indicated by a satellite, a particle. For example, in *he runs in*, the verb *runs* indicates manner, while the particle *in* indicates path.

Aske (1989) has pointed out that although Spanish verbs tend not to have motion and manner and to have only motion and path, there are instances of motion and manner verbs. He attributes this to two different types of path phrases: one a locative path phrase, which denotes a one-dimensional location in which an activity takes place, and the other a telic path phrase, which denotes the path of motion + an end-of-path location/ state of figure. Spanish allows motion and manner verbs with locative path phrases but not with telic ones (Stam, 2006a, 2006b, 2008).

L1 thinking for speaking in motion events

Studies examining speech in motion events (Aske, 1989; Berman & Slobin, 1994; Cadierno, 2004; Choi & Bowerman, 1991; Hohenstein *et al.*, 2006; Slobin, 1996a, 1996b, 2004, 2007; Slobin & Hoiting, 1994; Talmy, 1985, 2000b) have found that speakers of typologically different languages have different patterns of thinking for speaking about motion linguistically.

In particular, research on Spanish and English speakers' narrations of motion events show that Spanish speakers tend to describe states and expound descriptions of settings, whereas English speakers tend to describe processes and accumulate path components (Berman & Slobin, 1994; Slobin, 1991, 1996a, 1996b, 2003; Slobin & Hoiting, 1994). For Spanish speakers, crossing a spatial boundary is equivalent to a change of state and requires a new predicate. This is not the case for English speakers. A boundary crossing can be expressed in English by an additional prepositional phrase indicating path and ground, such as *the boy went through the door, up the stairs* and *into his room*.

Studies examining both the speech and gesture of the speakers of various languages (Duncan, 1996, 2001, 2002; Kita & Özyürek, 2003; McNeill, 1997, 2000; McNeill & Duncan, 2000; Özyürek & Kita, 1999; Özyürek *et al.*, 2005; Schulman, 2004) have found that speakers of typologically different languages have different patterns of thinking for speaking about motion not only linguistically, but also gesturally.

Looking at the narrations of native-Spanish and native-English speakers, McNeill and Duncan (2000) found that there was speech–gesture synchrony in their expression of motion events. Spanish speakers' path gestures tended to fall on the verb, and English speakers' path gestures tended to fall on the satellite. They also found that Spanish speakers had manner in gesture when there was none in the accompanying speech, whereas English speakers almost never had manner in gesture when there was none in the accompanying speech. In addition, McNeill (2000, 2005) pointed out that English speakers modify the importance of the manner aspect of the verb in their narrations through their gestures by either reinforcing the manner by producing an accompanying manner gesture or downplaying the manner by producing a path gesture or no gesture at all.

Native speakers' speech–gesture synchrony and use of gesture to express or downplay manner are important for second language research as they provide a way to investigate learners' thinking for speaking.

Thinking for speaking and L2 learners

As Cadierno and Lund (2004) pointed out, L2 learners need to learn which aspects of a motion event are important in the L2. In terms of the expression of motion in English, 'Spanish learners of English need to learn that in English the satellite encodes path, the satellite is obligatory, motion verbs encode manner, and path components are often accumulated within a single clause' (Stam, 2006a: 174). Where learners are in this process and what aspects of the L1 and L2 are present in their conceptualization of motion in their L2 are indicated by both their speech (see Cadierno, 2008, for a review of speech and writing studies investigating L2 thinking for speaking) and their gestures (Stam, 1998, 2006a, 2006b, 2007, 2008).

Several studies have looked at the speech and gesture of second language learners to investigate how their thinking for speaking about motion changes with second language acquisition (Brown, 2007; Brown & Gullberg, 2008; Choi & Lantolf, 2008; Kellerman & van Hoof, 2003; Negueruela *et al.*, 2004; Özyürek, 2002; Stam, 1998, 2006a, 2006b, 2008; Yoshioka, 2008; Yoshioka & Kellerman, 2006). These studies have concentrated on different aspects of the motion event, with some investigating the expression of path, others manner and still others ground.

Stam (1998, 2006a, 2006b, 2008), Kellerman and van Hoof (2003) and Negueruela *et al.* (2004) looked at Spanish and English speech and gesture to investigate whether learners' thinking-for-speaking patterns about path

undergo changes when they acquire a second language. These studies replicated previous findings regarding Spanish and English native speakers' thinking-for-speaking patterns in both speech and gesture (McNeill & Duncan, 2000) – Spanish speakers express path linguistically with a verb, and their path gestures tend to occur with the verb, while English speakers express path linguistically with a satellite, and their path gestures tend to occur with the satellite. However, their results on second language learners varied as a result of differences in their study designs. Kellerman and van Hoof (2003) and Stam (1998, 2006a, 2006b, 2008) had both between-participant and within-participant designs, while Negueruela *et al.* (2004)[1] did not. In addition, Kellerman and van Hoof (2003) and Negueruela *et al.* (2004) used the frog story, *Frog, where are you?* (Mayer, 1969), as their stimulus and examined only the frequency of gestures co-occurring with verbs and satellites and did not examine different levels of proficiency among the L2 learners.

Kellerman and van Hoof (2003) looked at three groups of participants: Dutch, Spanish and English speakers, whereas Negueruela *et al.* (2004) looked at two groups of learners (Spanish learners of English and English learners of Spanish) in addition to native-Spanish and native-English speakers. On the basis of the frequency of gestures co-occurring with verbs and satellites, Kellerman and van Hoof (2003) and Negueruela *et al.* (2004) concluded that L2 learners were still thinking for speaking in their first language. In particular, Kellerman and van Hoof found that the same percentage of path gestures (65%) of the Spanish learners of English fell on the verb in both their L1 and their L2 narrations, while Negueruela *et al.* found that 23–33% of the path gestures of the Spanish learners of English fell on the verb.

Stam (2006a, 2006b, 2008) used the cartoon *Canary Row* (Freleng, 1950) as her stimulus and looked not only at the frequency of gestures co-occurring with motion event speech elements, but also at the expressions used linguistically to express path and the interaction of speech and gesture among native speakers of Spanish and English and two groups of Spanish learners of English (intermediate and advanced). She found that, linguistically, the L2 learners sometimes expressed path with a satellite in English, but they did not accumulate path components within a single clause in speech with the exception of one instance by one learner. She also found that gesturally, there was a decrease in the percentage of path gestures co-occurring with verbs and an increase in the number of path gestures co-occurring with satellites in the learners' L2 narrations compared to their L1 narrations. However, the percentages alone were misleading because they did not take into account missing speech elements such as omissions of subjects, verbs and prepositions that occurred in the speech of the intermediate learners as a result of their language proficiency, for example, 'and the cat the ball in the mouth'.

In addition, she found developmental aspects in the L2 learners' speech and gesture use in terms of what aspects of motion events were focused on compared to L1 English speakers, such as interiority of ascent or setting. She concluded that the L2 learners' thinking-for-speaking patterns were a mixture of L1 (Spanish) and L2 (English) thinking-for-speaking patterns, reflecting their interlanguage systems.

These studies were all cross-sectional and although Stam (2006a, 2006b, 2008) found developmental aspects to the L2 learners' thinking-for-speaking patterns, cross-sectional studies provide us with only a snapshot of learners' thinking, they do not give us information on how individual learners' patterns of thinking for speaking change as they become more proficient in their L2. To ascertain these changes, longitudinal studies are needed.

The Study

This longitudinal study[2] investigated how thinking-for-speaking patterns about motion changed for an advanced Spanish learner of English[3] in nine years. It sought answers to the following questions:

(1) How does the learner express path and manner linguistically and gesturally in Spanish and English in 2006?
(2) How does this compare with her expression of path and manner in both languages in 1997 and with native speakers of both languages?
(3) What are the implications for thinking for speaking in an L2?

Participant

The participant was a Mexican-Spanish-speaking learner of English at the advanced proficiency level[4] at National-Louis University at the time that she was originally videotaped in 1997. At that time, she had been studying English for two years and working at a bank in the balances department for nine months. She reported that she used English 40% of the time and Spanish 60% of the time. By the time she was subsequently videotaped in 2006, she had graduated from the university with a degree in computer information systems management and had been working at a bank as an accounting specialist for seven years. She reported that she used both English and Spanish equally: English at work and socially in dating situations and with non-Spanish-speaking friends and Spanish at home with her family and sometimes at work with Spanish-speaking customers.

Procedures

The same procedures were followed in 1997 and 2006. The participant was shown a Sylvester and Tweety Bird cartoon, *Canary Row* (Freleng,

1950), in two segments and was asked to narrate each segment in Spanish and English to two different listeners: a Spanish-speaking and an English-speaking one. The order was counterbalanced, with the initial order for the narration of the first segment randomly assigned in 1997 and the same order followed in 2006 (Spanish-English, English-Spanish). The narrations were videotaped, and the participant was not told that thinking for speaking or gestures were a focus of the study.

Coding

One episode that contained three motion events – (1) Sylvester climbs up inside the drainpipe, (2) the ball goes inside Sylvester and (3) Sylvester and the bowling ball move/roll down and out of the drainpipe, across/down the street and into a bowling alley – was coded using McNeill's (1992) coding scheme to determine how path and manner were expressed both linguistically and gesturally in Spanish and English.

First, speech was transcribed including filled, unfilled and breath pauses; self-interruptions or self-corrections; and non-speech sounds. Next, gestures including the gesture phrase (the entire movement from preparation to retraction), the stroke (the part of the gesture with meaning) and any holds (prestroke or poststroke) were coded for hand shape and movement using both regular and slow motion speed (see Table 3.1, for coding conventions).

Then, the gestures were classified by type according to McNeill's (1992) classification system of iconic, metaphoric, beat, cohesive, deictic and Butterworth gestures. Iconic gestures are gestures that represent an action or object. Metaphoric gestures are gestures that represent an abstract idea. Beats are quick movements of the hand that occur at the meta-level of discourse to introduce new characters and new themes, summarize action and accompany repairs. Cohesive gestures are gestures that tie together thematically related material but temporally separated parts of discourse. Deictic gestures are pointing gestures, which are used to indicate places in

Table 3.1 Speech and gesture coding conventions

Speech coding	*Gesture coding*
* self interruption, repetition, repair	[gesture phrase]
% non-speech sound: swallow, laugh	[[gesture] [unit]]
<> filled pause and lengthening	stroke
/ unfilled pause	hold
# breath pause	

Source: Stam (2006a: 108)

real or abstract space, and Butterworth gestures are gestures that occur with lexical retrieval problems. This classification is useful for talking about gestures, but it should be remembered that the classification represents dimensions, not absolute categories of gesture. Gestures may be classified as both iconic and deictic or iconic with superimposed beats depending on the level of discourse.

Subsequently, the function of the gesture in terms of motion event component (path, manner, ground) and the meaning of the gesture were noted (e.g. Sylvester climbing up the drainpipe).[5]

Data analysis

Three types of data were analyzed and compared for the 1997 and 2006 narrations: speech, gesture rate, and speech and gesture. These data were then compared with those of monolingual-Spanish speakers and native-English speakers from Stam (2006a).

Speech analysis

Counts were made of the number of clauses in each narration, and the narrations were analyzed for how path and manner were expressed linguistically. Each finite or non-finite verb unit was counted as a clause, with aspectual and modal verbs counted with the main verbs as one clause in accordance with Berman and Slobin (1994). For example, constructions with *begin*, *go*, *try* and *want* were counted as one clause: *begin to climb*, *go rolling* and *try to go*. Self-referential, paranarrative clauses such as 'I mean', 'I think', 'I don't know how to say it' in English and *o sea* 'I mean' in Spanish were excluded from this count.

Gesture rate

To establish the gesture rate, counts were made of the number of gestures in each narration, and the number of gestures per clause was calculated. Excluded from these counts were any unclear gestures and gestures that occurred with self-referential and paranarrative clauses.

Speech and gesture analysis

To investigate the relationship of speech and gesture across narrations, the synchrony of the gesture in relation to speech was established by watching the video recording in slow motion and frame-by-frame (30 frames/s) with the accompanying audio to establish the onsets and offsets of gesture strokes (Duncan, 2002; Kita, 1993).

Path (path, path and ground), manner (manner, path and manner) and ground gestures were identified and counted. Next, what motion event speech element the stroke of the path gesture co-occurred with (verb, satellite, ground noun phrase, more than one element and *other*) was noted and counted, and percentages for the co-occurrence were calculated and compared (see Table 3.2, for motion event speech categories). Also, whether

Table 3.2 Motion event speech categories

Speech element	*Examples*
Verb = V, SV, VO, conjunction (S) V	goes; he goes; throws the ball; and he goes
Satellite = adverbs, prepositions of path	through; up; to; into
Ground noun phrase	the drainpipe
More than one = V + satellite, V + satellite + ground noun phrase, satellite + ground noun phrase	comes out; comes out the drainpipe; out the drainpipe
Other = conjunctions, subjects (alone), prepositional phrases, adjectives, pauses	he, with the ball inside

Source: Stam (2006a: 111)

or not manner gestures occurred with manner in speech was noted and tabulated. Finally, how speech and gesture interacted, that is, which aspects of the motion event the speech and gesture emphasized, for example, interiority of ascent versus ground setting description, were examined.

Several decisions were made in order to be able to compare across languages. For example, in Spanish, the subject can be omitted, and the verb without a subject in Spanish is the same as one with a subject in English. Therefore, it was necessary to consider verbs, subjects and verbs, verbs and objects, and conjunctions (subjects) and verbs as verbs. Also, gestures can express complementary information to speech; consequently, all verbs that had co-occurring path gestures were counted, not just motion verbs. Additionally, both adverbs and prepositions of motion were included as satellites because these prepositions can also express direction (Talmy, 2000b) and were necessary to consider in examining speech and gesture (Stam, 2006a, 2006b, 2008). Furthermore, although Spanish does not technically have satellites, for consistency in comparison across English and Spanish, the preposition *por* was considered a satellite. Therefore *por adentro de la canal* 'through inside of the canal' was counted as satellite + ground.

Lastly, to deal with gestures sometimes falling on incomplete words and grammatical constituents, 'the following decisions were made: (1) if the gesture fell on a syllable of the word, it was counted as co-occurring with the full speech element, for example, *co* from *come* was counted as a verb; (2) if it was a case of co-articulation, for example, *s in* from *gets in*, it was counted as a satellite; (3) and if the gesture fell on a preposition and an article, for example, *to the*, it was counted as a satellite' (Stam, 2008: 239–240).

Results

For each of the areas of data analyzed, I will present the results for both Spanish and English.

Speech

The number of clauses the participant produced in her narrations in both Spanish and English did not change much between 1997 and 2006. In Spanish she produced nine clauses in 1997 and 10 clauses in 2006, while in English she produced 15 clauses in 1997 and 14 clauses in 2006 (Table 3.3).

However, the number of clauses she produced in Spanish was less than the number the monolingual-Spanish speakers produced and more than the number that the native-English speakers produced. The number of clauses for the monolingual-Spanish speakers ranged from 12 to 21 with a mean of 15.8, and the number for the native-English speakers ranged from 6 to 13 with a mean of 8.6. The difference between the mean number of clauses for the monolingual-Spanish speakers and the native-English speakers as previously reported by Stam (2006b: 154) was statistically significant, $t(1, 8) = 3.286$, $p = 0.011$. The results suggest that the number of clauses the participant produced follows the opposite language pattern: her number of clauses in Spanish is more similar to the English pattern, and her number of clauses in English is more similar to the Spanish pattern.

In terms of the participant's linguistic expression of path and manner, there were no differences in how she expressed path and manner linguistically in Spanish. In both 1997 and 2006, she expressed path with verbs such as *subir* 'ascend' and manner with constructions such as *ir(se) rodando* 'go rolling'. This was similar to how the monolingual Spanish speakers expressed path and manner with verb constructions (Table 3.4).

There was a difference in how she linguistically expressed path but not manner in English during the period between 1997 and 2006. In 1997, she expressed path 33% of the time with just the verb *go* without an accompanying satellite or prepositional phrase. This is something that native-English

Table 3.3 Number of clauses

Language	*Year*	*Clauses*
Spanish	1997	9
	2006	10
English	1997	15
	2006	14

Table 3.4 Motion verbs + satellites[a]

Spanish 1997 (N = 6)		*English 1997 (N = 9)*	
aventar 'throw'	17% (1)	come + out	11% (1)
bajar 'descend'	17% (1)	go Ø	33% (3)
ir subiendo 'go ascending'	17% (1)	go + down, through	22% (2)
ir(se) rodando 'go rolling'	17% (1)	go + upstairs	11% (1)
poner 'put'	17% (1)	put + through	11% (1)
subir 'ascend'	17% (1)	throw + away	11% (1)
Spanish 2006 (N = 5)		*English 2006 (N = 7)*	
ir 'go'	20% (1)	climb + inside	14% (1)
ir(se) rodando 'go rolling'	20% (1)	go + inside	43% (3)
mandar 'send'	20% (1)	go + out, to	28% (2)
subir 'ascend'	20% (1)	throw + into	14% (1)
tirar 'throw'	20% (1)		
Monolingual speakers (N = 52)		*Native speakers (N = 30)*	
arrojar 'throw'	3.8% (2)	climb + up	6.7% (2)
aventar 'throw'	11.5% (6)	come + down, out, up	20.0% (6)
caer 'fall'	1.9% (1)	crawl + up	3.3% (1)
entrar 'enter'	5.8% (3)	drop + down	10.0% (3)
ir(se) 'go (away)'	15.4% (8)	fall + back down, into	6.7% (2)
ir bajando 'go descending'	3.8% (2)	go + in, into, out, up up through	20.0% (6)
ir botando 'go bouncing'	1.9% (1)		
ir subiendo 'go ascending'	3.8% (2)	knock + down	3.3% (1)
meter(se) 'insert oneself, get in(to)'	13.5% (7)	put + into	3.3% (1)
regresar 'return'	1.9% (1)	roll + down, on down	16.7% (5)
sacar 'take out'	3.8% (2)	run Ø	3.3% (1)
salir(se) 'exit'	13.5% (7)	throw + down, into	6.7% (2)
salir rodando 'exit rolling'	1.9% (1)		
subir(se) 'ascend'	7.7% (4)		
tirar 'throw'	1.9% (1)		
tumbar(se) 'knock down'	1.9% (1)		
venir(se) 'come'	5.8% (3)		

[a]Prepositions of motion and expressions that conflate path and ground (Talmy, 2001) are included as satellites in this list. Instances of no satellites in the speech are indicated by Ø.

speakers do not do – English speakers' verbs are followed by satellites that express path or prepositional phrases that express path and ground (Stam, 2006a, 2008). By 2006, the learner was expressing path linguistically with a satellite 100% of the time. However, there was no change in her expression of manner. She did not use the verb *roll* in either 1997 or 2006. This differed from the native-English speakers, who all used the verb *roll* (Table 3.4).

Gesture rate

The number of gestures per clause changed in both languages between 1997 and 2006. The learner had fewer gestures per clause in Spanish than in English in 1997, whereas she had more gestures per clause in Spanish than in English in 2006 (see Table 3.5).

In Spanish, she had 1.56 gestures per clause in 1997 and 2.10 in 2006. The number of gestures per clause in 1997 was similar to the number of gestures per clause Stam (2006a) found for monolingual-Spanish speakers, who had a mean of 1.53 gestures per clause (Table 3.6). In English, she had 3.20 gestures per clause in 1997 and 1.79 in 2006. The number of gestures per clause in 2006 was more in line with the number of gestures per clause

Table 3.5 Number of gestures per clause by year

Year	*Language*	*Gestures per clause*
1997	Spanish	1.56
	English	3.20
2006	Spanish	2.10
	English	1.79

Table 3.6 Number of gestures per clause by language

Language	*Group*	*Gestures per clause*
Spanish	Participant 1997	1.56
	Participant 2006	2.10
	Monolingual speakers	1.53[a]
English	Participant 1997	3.20
	Participant 2006	1.79
	Native speakers	1.88[a]

[a]Stam (2006a: 127).

Stam (2006a) found for native-English speakers, who had a mean of 1.88 gestures per clause (Table 3.6). In other words, her gestures per clause in Spanish in 1997 followed the Spanish rate, and her gestures per clause in English in 2006 followed the English rate. This makes sense in terms of English. As the learner became more fluent in English, she gestured less per clause. The change in the rate in Spanish, however, suggests that as the learner became more fluent in English, she also became less fluent in Spanish, and in fact, the increase in gestures per clause in Spanish in 2006 was related to word retrieval problems she had in Spanish.

Speech and gesture

Path

As mentioned previously, the different patterns of thinking for speaking of native speakers of Spanish and English are also expressed gesturally. Spanish speakers' path gestures tend to co-occur with a verb or *other* (McNeill & Duncan, 2000; Stam, 2006a, 2008) and English speakers' path gestures tend to co-occur with a satellite or a verb + satellite (Kellerman & van Hoof, 2003; McNeill & Duncan, 2000; Stam, 2006a, 2006b).

The co-occurrence of path gestures with *other* in Spanish is a pattern found by Stam (2006a). She noticed that the types of *other* constituents' path gestures that co-occurred within L1 Spanish and L1 English reflected syntactic differences between the two languages as well as the principle of communicative dynamism in which new, focused or contrastive information receives prosodic emphasis and gesture (McNeill, 1992). Spanish speakers had path gestures co-occurring with many more different types of *other* constituents, such as pauses, subjects, objects of the preposition that were not ground noun phrases and indirect objects, than English speakers did. For instance, because the subject is not obligatory in Spanish, its addition in an utterance may be a point of focus and it may receive a gesture.

In 1997, the learner produced a total of five path gestures in Spanish and 22 path gestures in English. When speaking Spanish, her path gestures tended to co-occur with the verb (40%) and the ground noun phrase (40%) following the Spanish pattern (McNeill & Duncan, 2000). When speaking English, her path gestures tended to co-occur with the verb (32%) and *other* (45%) following the Spanish pattern (Stam, 2006a, 2008), but she also had some path gestures that co-occurred with the satellite (the English pattern). Her path gestures in English in 1997 were somewhere between the Spanish and English patterns (Figure 3.1a).

In 2006, the learner produced a total of 10 path gestures in Spanish and 17 path gestures in English (Figure 3.1b). Of the 10 path gestures she produced in Spanish, 30% co-occurred with the verb, 30% with more than one element, 20% with the ground noun phrase and 20% with *other*, again following the Spanish pattern even though there had been a decrease in the percentage of path gestures co-occurring with verbs (Figure 3.2).

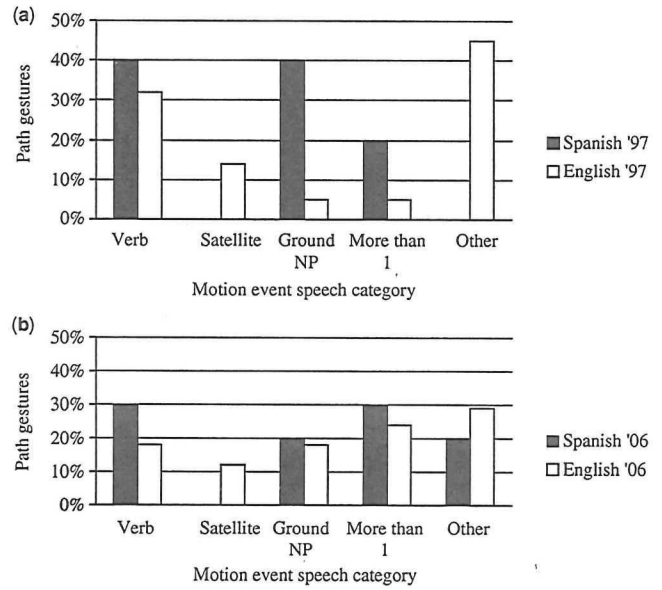

Figure 3.1 (a) Percentage of path gestures with motion event speech element Spanish and English: 1997 (b) Percentage of path gestures with motion event speech element Spanish and English: 2006

Of the 17 path gestures she produced in English in 2006, 18% co-occurred with the verb, 12% with the satellite, 18% with the ground noun phrase, 24% with more than one element and 29% with *other*. The percentage of path gestures co-occurring with the satellite remained about the same from 1997 to 2006, while both the percentages of path gestures co-occurring with the verb and *other* decreased, and the percentage co-occurring with the ground noun phrase and more than one element increased (Figure 3.3).

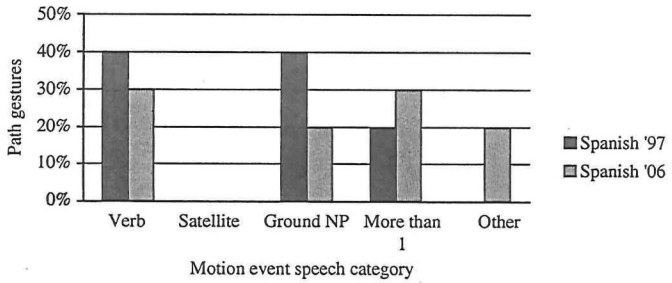

Figure 3.2 Percentage of path gestures with motion event speech element Spanish: 1997 and 2006

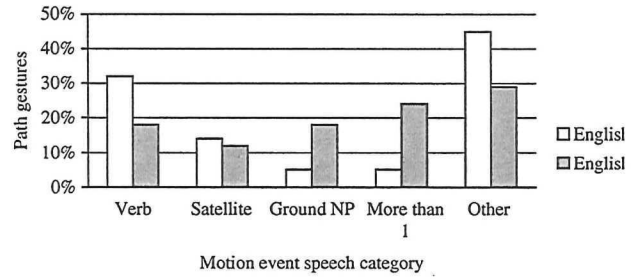

Figure 3.3 Percentage of path gestures with motion event speech element English: 1997 and 2006

Clearly, how the learner expressed path gesturally changed between 1997 and 2006, but how do these changes compare with how monolingual-Spanish and native-English speakers express path gesturally? Figures 3.4a and 3.4b compare the learner's speech and gesture results with those found by Stam (2006a) for monolingual-Spanish and native-English speakers. As can be seen by Figure 3.4a, the learner's gestural expression of path in 2006 in English has become more English-like. There also appears to be some influence of English on how the learner expresses path gesturally in Spanish in 2006 with a decrease in the percentage of path gestures

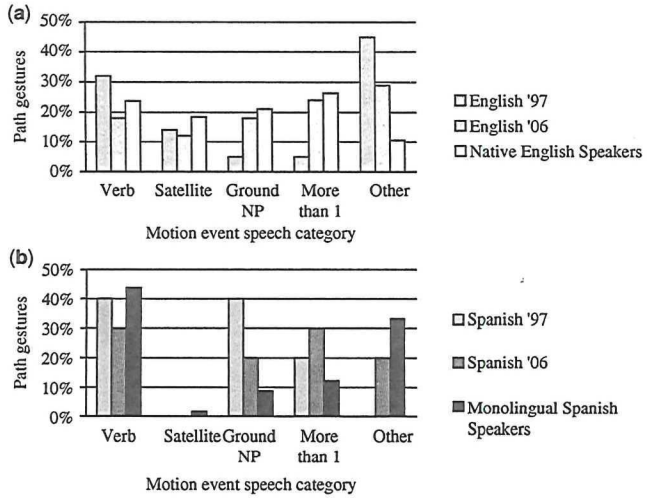

Figure 3.4 (a) Percentage of path gestures with motion event speech element – English L2 learner and native-English speakers. (b) Percentage of path gestures with motion event speech element – Spanish L2 learner and monolingual Spanish speakers

with verbs and increase in the percentage with more than one element (Figure 3.4b).

Manner

As stated previously, McNeill and Duncan (2000) found that Spanish speakers may have manner in gesture when there is none in the accompanying speech, while English speakers rarely have manner in gesture when there is none in the accompanying speech.

In Spanish, all of the learner's manner gestures co-occurred with manner in speech in 1997, whereas 50% of them co-occurred with manner in speech and 50% with no manner in speech in 2006. The 2006 results were similar to the monolingual-Spanish speakers who had 55% of their manner gestures co-occurring with manner in speech and 45% of their manner gestures co-occurring with no manner in speech (Table 3.7). In English, none of the learner's manner gestures co-occurred with manner in speech in either 1997 or 2006. This is very different from the native-English speakers who had 75% of their manner gestures co-occurring with manner in speech and 25% co-occurring with no manner in speech.

There were also differences in the types of manner gestures that were produced by the Spanish speakers and the English speakers. The Spanish speakers produced both path and manner gestures and manner gestures, whereas the English speakers produced only path and manner gestures. In Spanish the learner produced only path and manner gestures in both 1997 and 2006. In English, on the other hand, she produced path and manner and manner gestures in 1997 and only path and manner gestures in 2006 (Table 3.8). These results suggest that when it comes to manner, the learner has not yet internalized the English thinking-for-speaking pattern.

Table 3.7 Percentage of manner gestures with manner/no manner in speech

Language	*Group*	*Manner in speech*	*No manner in speech*
Spanish	Participant 1997 ($N = 1$)	100% ($N = 1$)	0%
	Participant 2006 ($N = 2$)	50% ($N = 1$)	50% ($N = 1$)
	Monolingual speakers ($N = 11$)	55% ($N = 6$)	45% ($N = 5$)
English	Participant 1997 ($N = 3$)	0%	100% ($N = 3$)
	Participant 2006 ($N = 1$)	0%	100% ($N = 1$)
	Native speakers ($N = 4$)	75% ($N = 3$)	25% ($N = 1$)

Table 3.8 Type of manner gesture

Language	*Group*	*Path + Manner*	*Manner*
Spanish	Participant 1997 ($N = 1$)	100% ($N = 1$)	0%
	Participant 2006 ($N = 2$)	100% ($N = 2$)	0%
	Monolingual speakers ($N = 11$)	82% ($N = 9$)	18% ($N = 2$)
English	Participant 1997 ($N = 3$)	33% ($N = 1$)	67% ($N = 2$)
	Participant 2006 ($N = 1$)	100% ($N = 1$)	0%
	Native speakers ($N = 4$)	100% ($N = 4$)	0%

Speech and gesture interaction

Let us look at how speech and gesture interact in the learner's narrations in both Spanish and English in 1997 and 2006 and how these compare with monolingual-Spanish and native-English speakers' narrations. Stam (2008: 249–250) used an example of the learner's description of Sylvester going up inside the drainpipe and Sylvester and the bowling ball coming out of the drainpipe in English from 1997 to illustrate that although the learner expressed these motion events in speech the same way that native-English speakers do, her gestures indicated that she was not thinking about motion in the same way and that she was in a state of transition.

These descriptions will be compared with examples of the learner's description of the same events in English in 2006. In addition, the learner's description of the same events in Spanish in 1997 and 2006 will be discussed and compared.

Spanish

The interaction of speech and gesture in the learner's Spanish (L1) narrations did not change much between 1997 and 2006 even though she produced more path gestures[6] in 2006. Both her speech and gesture followed a Spanish thinking-for-speaking pattern.

In describing Sylvester going up the drainpipe in 1997 [Example (1)], the learner produced only one motion event gesture – a ground one (b). This gesture emphasized the ground setting description, a characteristic of a Spanish thinking-for-speaking pattern (Berman & Slobin, 1994) and is similar to the gestures in the monolingual-Spanish narrations, where the drainpipe, the ground element, was described in detail and often had an accompanying ground gesture.

(1) (a) *después %swallow <uh> [**subió otra**] vez*
afterwards %swallow <uh> he-'ascended' another time

metaphoric: right hand 'O' at lap over right leg moves up a little and to the left down to left leg <presenting the next episode>

(b) [*por el tubo **ése donde baja el agua** cuando llueve*]
through the tube that-one where 'descends' the water when it-rains
iconic: right hand C-shape moves down to waist and holds <drainpipe> GROUND

When the learner narrated the cartoon in 2006, she had to be prompted to recall the episode, which caused her to have some filled pauses in speech [Example (2)]. She produced three motion events gestures – one ground gesture (2a) and two path ones (path and ground, 2b and 2c), with the path gestures co-occurring with a verb (2b) and more than one element (2c). Her narration of the event was still within a Spanish thinking-for-speaking pattern (Stam, 2006a, 2006b) with its emphasis on ground and with path gestures co-occurring with verbs such as *subir* 'ascend'.

(2) (a) *<este>* [[*<ohl> **también otro de los pla^nes fuel#<uuh>***]
this> <ohl> also another of the plans was / # <uuh>
a: iconic with superimposed beat: both hands slightly bent facing each other at right chest beat <drainpipe> GROUND

(b) [*/ **subi<i>r***]
/ to 'ascend'
b: iconic: left hand extended, thumb slightly in at chest <pipe >; right hand extended slightly bent, thumb slightly in moves in to left hand <Sylvester going into the drainpipe> PATH + GROUND

(c) [***por adentro de la canal***]]
through inside of the canal
c: iconic (enhanced): left hand extended, thumb slightly in at upper chest moves down as right hand moves up to right chest <pipe>; right hand extended slightly bent, thumb slightly in at right chest moves into body to left hand, through left hand, up to mouth and retracts down to left hand <Sylvester going into and up the drainpipe> PATH + GROUND

The learner did not describe Sylvester coming out of the drainpipe in Spanish in 1997. She did, however, describe this event in 2006 [Example (3)], where she produced one path gesture that covered more than one element (verb + ground). This again was similar to the narrations of the monolingual-Spanish speakers.

(3) [*/ **y lo manda hasta afuera** //*]
/and him sends until outside
iconic: right hand extended slightly bent at right shoulder with elbow bent arches down and to the right to extreme right side toward listener and holds <Sylvester and bowling ball going out the drainpipe> PATH

English

The interaction of speech and gesture in the learner's English (L2) narration of Sylvester going up inside the drainpipe changed considerably between 1997 and 2006. In 1997, the learner produced more ground gestures (8), due in part to not knowing the word *pipe* but also to having a visual picture of the ground element and wanting the interlocutor to understand this element, than in 2006 when she produced only two ground gestures and knew the word *pipe*. In addition, she produced two manner only gestures in 1997, but did not produce any in 2006 (Table 3.8). Furthermore, her gestures were very segmented in 1997 – almost every grammatical constituent had its own gesture. In 2006, this was not the case. Her gestures covered more speech like native-English speakers do (Stam, 2006a, 2008). Let us look at her descriptions of Sylvester going up inside the drainpipe in 1997 [Example (4)] and 2006 [Example (5)].

(4) RH[[he* **the cat**][**went //**][**through the***][///][the<e> **pipe** / and * but the*]]/
LH[[he* **the cat**][**went //**]] through the* / / / the<e> pipe / and* but the* /
a b c d e

a: iconic: right hand at right, left hand, 'O' at left waist <Sylvester entering the drainpipe> PATH

b: iconic: right hand at right chest moves up to right side of face, left hand, 'O' at waist lowers to lap as right hand rises <Sylvester going up inside drainpipe> PATH

c: iconic: right hand at right side of face moves in toward body and moves up to forehead changing hand orientation to palm toward down, fingers toward left <Sylvester going through the drainpipe> PATH

d: iconic: right hand at nose level and moves up to top of head then retracts to nose level <pipe> GROUND

e: iconic (reduced repetition of previous gesture) right hand at upper chest moves up in toward body to chin level and down away from body to upper chest, small circular movement, and holds <pipe> GROUND

NB: Gestures 'd' and 'e' occur on a metalinguistic level with a word search and finding of the word, respectively (Stam, 2008: 249).

(5) [[/ and then <uh> he* **he** go] [oes **inside the* the* the pipe** and / when]]
a b

a: beat: pre-stroke hold; left hand loose 'C' at right chest <pipe> GROUND, right hand tapered 'O' at right upper arm beats into left hand

b: iconic: left hand 'C' at right chest <pipe >, right hand tapered 'O' at right upper arm arcs slightly down, curves up, moves up to head, holds and retracts <Sylvester going inside and up the drainpipe> PATH + GROUND

In 1997 [Example (4)], the learner produced five gestures in describing Sylvester going up through the drainpipe: three path and two ground gestures. In 2006 [Example (5)], she produced two gestures in describing the same event: a gesture that was both a beat and ground gesture (5a) on the

subject, which introduces the event, and a path and ground gesture (5b) on more than one element (satellite and ground), which emphasizes the Sylvester going inside and up the drainpipe. This is much more similar to native-English speakers' speech and gesture as reported by Stam (2008: 248). The gesture emphasizes both Sylvester climbing up and the interiority of the motion event.

Similarly, the speech and gesture in the learner's description of Sylvester and the bowling ball coming out of the drainpipe was much more segmented in 1997 than in 2006. In 1997, the learner produced four gestures in describing Sylvester and the bowling ball coming out of the drainpipe: one manner, two path and one ground gestures [Example (6)]. The manner gesture (6a) co-occurred with a subordinating conjunction *when*, while the two path gestures co-occurred with the satellite *out* (6b) and part of a ground noun phrase *from the* (6c), and the ground gesture co-occurred with the remainder of the ground noun phrase *pipe*.

(6) o[[kay **when*when** h][e<e> came **ou<u>t**][**from the**][<e> **pipe**]]
a b c d

a: iconic: both hands, right hand at lap moves up to upper left chest and makes 1½ circles in toward body and away from body, left hand moves up to upper left side <Sylvester + bowling ball rolling> MANNER

b: iconic: both hands, right hand at left upper arm moves in toward body and down to left chest, and continues down to lap, left hand moves in toward body and down to left upper arm <Sylvester + bowling ball going down the drainpipe> PATH

c: iconic: both hands, right hand at left chest moves down to lap, left hand at upper left side moves down to lap <Sylvester + bowling ball going down the drainpipe> PATH

d: iconic: both hands, palms toward center, fingers toward center, joined at left lap <drainpipe> GROUND (Stam, 2008: 250)

In 2006, the learner produced a total of two gestures in describing this event, both path gestures [Example (7)]. One of the path gestures co-occurred with the verb (7a) and the other with the ground noun phrase (7b). The interaction of speech and gesture is much more similar to the speech and gesture of native speakers [Example (8)] where there is only one gesture than the speech and gesture in her 1997 description was.

(7) [[and he **goes a<a>ll**] [out **of the pipe**]]
a b

a: iconic: right hand wrist bent at waist moves slightly to the right to lower right side <Sylvester + bowling ball going out the drainpipe> PATH

b: iconic (reduced repetition of previous gesture): right hand wrist bent at lower right side moves to the right and slightly up <Sylvester + bowling ball going down and out the drainpipe> PATH

(8) [and he comes **out the bott**om of the drainpipe]

iconic + deictic: left hand index finger extended at upper left side goes straight down, then curves toward center under right at lap and holds. <Sylvester + bowling ball going down and out the pipe> PATH

To summarize, between 1997 and 2006, the learner's linguistic expression of path remained the same in Spanish but changed in English. She consistently used satellites in 2006, something she did not do in 1997. Her gestural expression of path changed in both languages. In Spanish, there was a decrease in path gestures with verbs and ground noun phrases and an increase in path gestures with more than one element and other. Despite these changes in path gestures, her speech and gesture overall continued to follow the Spanish thinking-for-speaking pattern.

In English, there was a decrease in path gestures with verbs and *other* and an increase in path gestures with ground noun phrases and more than one element. In addition, her speech and gestures in English became less segmented, and her gestures covered more constituents in utterances like native-English speakers' gestures do. Over the nine years, her pattern of thinking for speaking about path in English became more native-like.

The learner's expression of manner did not change in either language between 1997 and 2006. She continued to express manner within a Spanish thinking-for-speaking pattern in both Spanish and English. She continued not to produce the manner verb *roll* in English like native-English speakers do, and she expressed manner only in gesture when there was none in speech.

Discussion and Conclusion

This study sought answers to three questions: how the learner expressed path and manner linguistically and gesturally in Spanish and English in 2006, how this compared with her expression of path and manner in both languages in 1997, and what implications this had for thinking for speaking in an L2.

The results show that the learner's expression of path and manner did not change linguistically in Spanish from 1997 to 2006. She expressed path with the verb and manner with a gerund following the Spanish thinking-for-speaking pattern and used the same types of motion verbs in both narrations. Her expression of path linguistically in English, however, did change. In 1997, she sometimes expressed path linguistically with a satellite following the English thinking-for-speaking pattern, but she also sometimes expressed it with just a verb following the Spanish thinking-for-speaking pattern. By 2006, her expression of path linguistically followed the English thinking-for-speaking pattern. She consistently expressed path with a satellite. However, her expression of manner did not change. She never used the manner verb *roll*.

Gesturally, there was no change in how the learner expressed manner in either language, but there was a change in how she expressed path in both languages from 1997 to 2006. In Spanish, there was an increase in path gestures with more than one element and *other* and a decrease in path gestures with verbs and ground noun phrases. It is possible that this increase in path gestures with more than one element and decrease with verbs is a result of L2 English influence on L1 Spanish. Pavlenko and Jarvis (2002) found bidirectional transfer L1 ↔ L2 in the speech of Russian L1/English L2 speakers, and Brown (2007) found some evidence for L2 English influence on the linguistic expression of path in the speech of L1 non-monolingual Japanese speakers, but not for the gestural expression of path. At least in terms of speech, the L2 can influence the L1; however, it is not clear yet whether the L2 can additionally influence L1 gestural expression of path. The results of this study also showed that despite the increase in path gestures with more than one element and decrease with verbs, the learner's speech and gesture overall in her L1 continued to follow the Spanish thinking-for-speaking pattern. The question of whether L2 thinking for speaking can influence L1 thinking for speaking both linguistically and gesturally needs further exploration.

In English, there was an increase in path gestures with ground noun phrases and more than one element and a decrease in path gestures with verbs and *other*. In addition, the learner's speech and gestures together changed. The gestures covered more speech and were less segmented in 2006 than in 1997. These differences in the learner's gestural expression of path from 1997 to 2006 reflect a change in her L2 thinking for speaking – her thinking for speaking about path became more native-like. These results are similar to those found by Choi and Lantolf (2008) that showed that L2 learners had a shift to the L2 thinking-for-speaking pattern for the expression of path, but not for manner.

The change in the learner's expression of path both linguistically and gesturally is probably a result of her increased English proficiency and her use of the language on a daily basis in a number of situations both at work and socially. 'Acts of communication always take place in a cultural context, and cultural practices are part of the online processes that include thinking and speaking' (Slobin, 2007: 920). As the learner interacted more in English in American culture, her thinking for speaking about path became more native-like.

Why did her expression of manner not change in the same way? I think there are several possible explanations. Although manner is an important aspect of English verbs, it is path that is the most salient element in a motion event: something has to move somewhere (Slobin, 2007). Also, formal learners of English are explicitly taught two-word verbs and prepositions.

They are not exposed to manner to the same extent that native-English-speaking children are. Native-English-speaking children, who acquire manner verbs early (Berman & Slobin, 1994), are exposed to a large number of manner verbs in books, nursery rhymes and games. These are not present in the same way in L2 textbooks and materials for adults, and adults do not play the same types of games as children do. Therefore, exposure could be a factor in L2 learners' acquiring path and not acquiring manner thinking-for-speaking patterns. Another possibility is that learners focus on only one aspect of the motion event at a time, acquiring first path and then manner. Finally, perhaps manner is a pattern acquired in childhood that is resistant to change (Slobin, 1996a), and it just does not change in L2 acquisition.

Although this study showed that the learner's thinking for speaking about path in her L2 changed in the nine years, the results are limited. The study examined only one individual and her speech and gesture in only one episode of her cartoon narration. Nevertheless, that the learner's L2 thinking for speaking about path changed implies that L2 thinking for speaking is not static. It can change over time (cf. Han, 2008). That her L2 thinking for speaking about manner did not change implies that not all aspects of thinking for speaking change equally and learners' L2 thinking-for-speaking patterns reflect their interlanguage systems (cf. Han, this volume).

L2 learners who are immigrants to another country often find themselves between two cultures. They are no longer the same as they were in their home country, and they are not fully a member of the new country's culture. Their L2 thinking-for-speaking patterns may reflect not only their interlanguage systems but also their intercultural identity.

More research examining learners' L2 thinking-for-speaking patterns linguistically and gesturally in different contexts needs to be conducted. Longitudinal studies of speakers of different native languages learning various second languages, studies of individual differences, and studies that explore the role of explicit instruction of L2 thinking for speaking are all necessary for us to fully investigate to what degree learners can acquire L2 thinking-for-speaking patterns.

Notes

1. Negueruela *et al.* (2004) did not compare the speech and gesture of the Spanish learners of English and English learners of Spanish in both their L1 and L2.
2. This research was funded by a 2006–2007 faculty development grant from National-Louis University.
3. I had initially hoped to conduct a follow-up study on more than one learner. However, that was not possible as only one learner agreed to participate.

4. The learner was beyond ESOL Level 5, the last class in the former ESOL program at National-Louis University. The ESOL program (1979–2005), a semi-intensive five-level integrated skills program with a grammatically based curriculum, was designed to provide English language learners with the English necessary to succeed in undergraduate studies. Students were passed to the next level with a minimum grade of C.
5. Questions on the coding of or timing of gestures were brought to laboratory meetings at the McNeill laboratory at the University of Chicago where members of the laboratory watched the videotaped segments in question and reached a consensus on what the coding should be.
6. This increase in path gestures may have been due to more comfort with the task or a different listener. These factors warrant further exploration, but are beyond the scope of this chapter.

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